

Class 05

Topics

- Simplestats-like updating for time-varying mean
- More Event Graph Examples
 - Finite Waiting Room
 - No Queue
 - Tandem Queue
- Reading
- Basic Event Graph Modeling

Multiple Server Queue with Finite Capacity

Parameters

- $\{t_A\}$ interarrival times
- $\{t_S\}$ service times
- k # servers
- c capacity of queue ($C > 0$)

● State

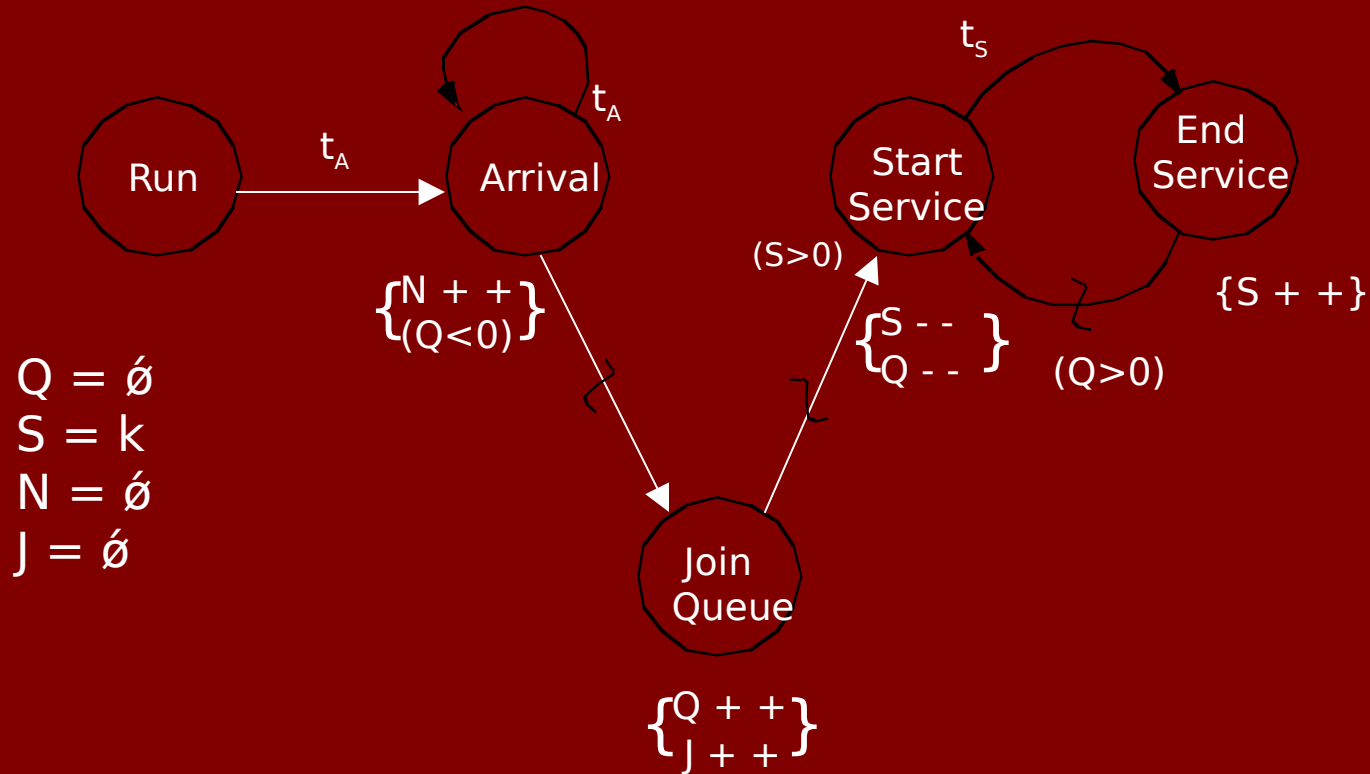
Q = # in queue

S = available servers

N = # arrivals

J = # served

Event Graph



Discrete Event Simulation Modeling

Multiple Server Queue With No Queue

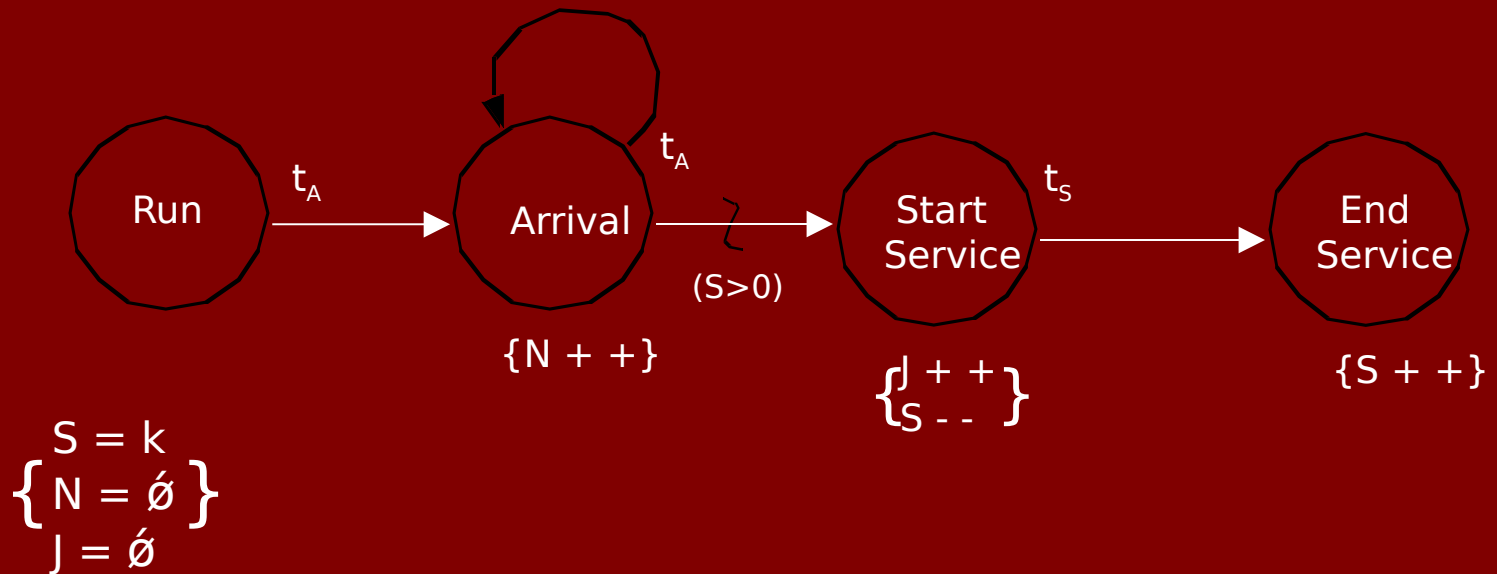
Parameters

- $\{t_S\}$ service times
- $\{t_A\}$ interval times
- K # servers

State

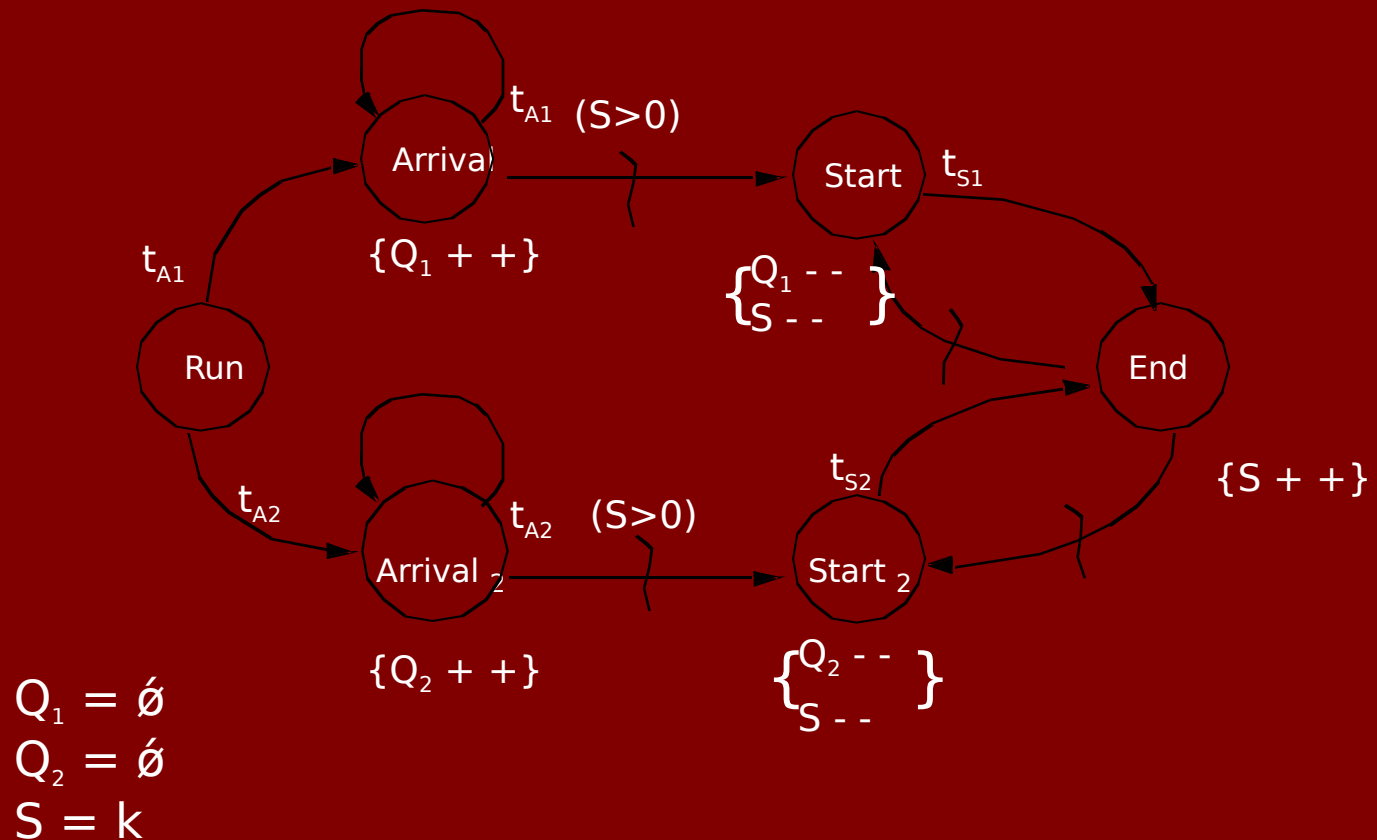
- S # available servers
- N # arrivals
- J # served

Event Graph



Discrete Event Simulation Modeling

Two Types of Customer, One Type of Server



Two Types of Customers, Two Different Service Times

- One type of server
- Priority to type 2 customers

Parameters

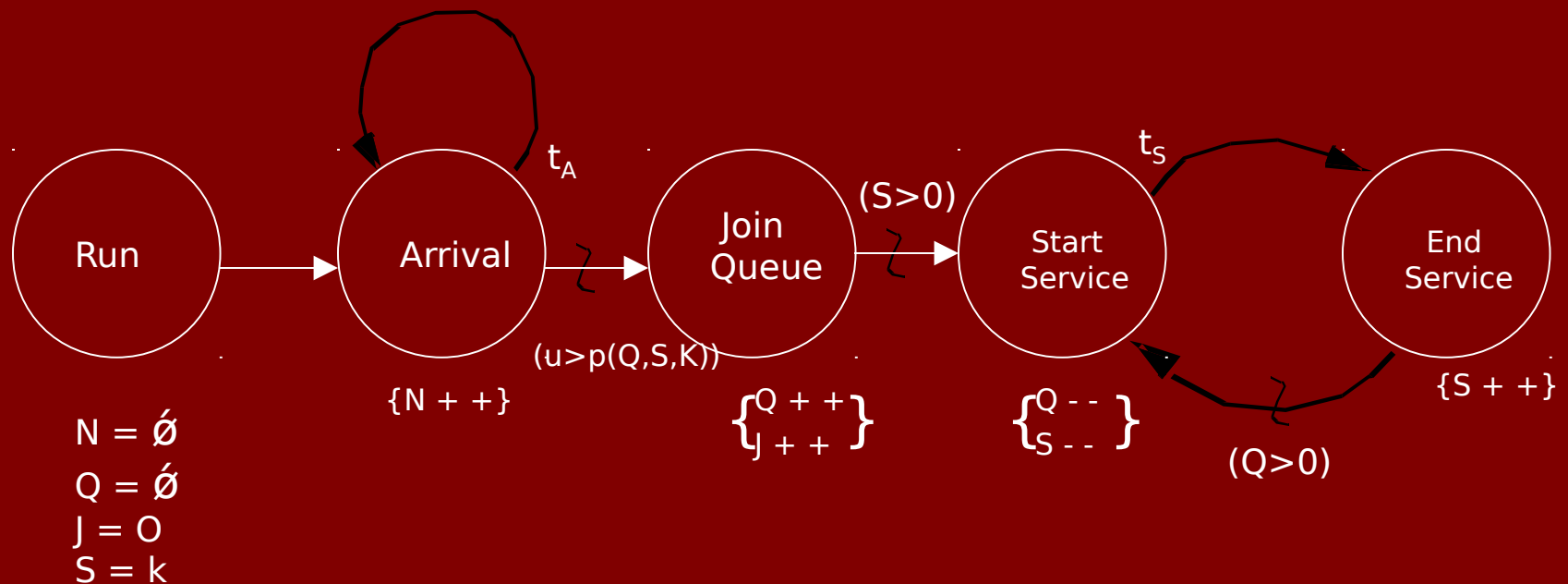
- $\{t_{Ai}\}$ interarrival times for customers of type i ($i=1,2$)
- $\{t_{Si}\}$ server times for customers of type i ($i=1,2$)
- k_i # servers of type i

State

- Q_i = # of customers of type i ($i=1,2$)
- S = # of available servers

Balking

- Arriving customer balks (i.e., choose not to join the system) with probability $P(Q, S, K)$



Parameters

- $\{t_A\}$ interarrival times
- $\{t_s\}$ service times
- K # servers
- $\{A\}$ add??? Un (0,1)
- $p(Q,S,K)$ $P\{\text{Balk}\}$ as a function of Q,S,K

State

- N # potential customers
- J # customers who join the system
- Q # in system
- S # available servers